Outline: Chapter 10.3 Example - Theory of Natural Selection

Directions:

- Use the section titles in the book to organize your own sections.
- Underline these sections and use bullets (indented) to summarize the main points in that section.
- Main points should cover the information in that section and answer the question you make the title section into. Example title section: *Insights to Natural Selection*. Your bullets below that should answer the question “What are the insights that led to Natural Selection?”
- Use examples from the book to further explain concepts. This includes the figures and side notes!
- Make numbered lists if the book references this. Example: 4 main principles of the theory of natural selection
- **Bold** identified key words in your outline to make it easy to find and highlight the importance
- Do not just make a list of vocabulary words!!! This is an outline of the information. It should contain enough detail that you can use it to study for your test.

**Insights to Natural Selection**

- **Artificial Selection**: Process of changing species by breeding in certain traits
  - Darwin noticed variation in domestic species not seen in wild.
  - **Heritability**: In order to breed new traits, the traits had to be able to be passed on.
  - Darwin though if humans could act as a selective pressure then nature could as well.
  - **Theory of Natural Selection**: Mechanism by which individuals have inherited beneficial adaptations and produce more offspring on average than do other individuals through environmental pressures as the selective agent. Characteristics are selected only if they give a selective advantage. Takes a long time over generation for change.

- **Struggle for Survival**:
  - Mathus proposed limitations to human population growth such as resources. Darwin reasoned the same struggle exists in nature.
  - "Decent with modification" - Well suited variations in traits are selected for and develop over generations.

**Natural Selection Explains Evolution**

- 4 Main principals of the Theory of Natural Selection:
  1. **Variation**: Heritable differences in a population from parents or mutations
  2. **Overproduction**: Too many offspring creates competition so not all survive
  3. **Adaptation**: Certain variations allow individuals a better chance for survival in its environment that could be “naturally selected” to live longer and produce more offspring.
  4. **Decent with Modification**: Natural selection will eventually result in species with adaptations to their environment for survival and reproduction.

- **Example of Natural Selection: Jaguars**
  1. Jaguars had less food and had to adapt to eat reptiles.
  2. Jaguar population had variation in jaw and tooth size. Biggest jaws and teeth were selected.
  3. Descendants over time had bigger jaws and teeth to eat new food source.
• **Fitness**: In Biology means the measure of the ability to survive and produce more offspring relative to other members of the population. Example: Jaguars with larger jaws and teeth were more “fit” and selected for.

**Natural Selection acts on existing variation**

• You continue these notes!!!